Radical Mastectomy with Parasternal and Supraclavicular Dissection for Mammary Carcinoma

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THE radical mastectomies including parasternal dissection operated upon from 1950–1955 in the Department of Surgery C, Rigshospitalet, Copenhagen, have been classified according to the Columbia clinical criteria, and the 5- and 10-year survival rates have been calculated for the Stages A, B, C and D. All the cases have been located after 10 years. Two patients living more than 10 years after operation have been left out of this work as the pathological report is uncertain as to malignancy.

In 1950, most of our patients were given postoperative irradiation but later on, in collaboration with the Radium Center, no x-ray treatment was given until definite signs of recurrence. Castration and hormone treatment were never given prophylactically but only in cases of recurrence.

Most of the patients were referred to us from the Radium Center and secondary treatment was given there. We are greatly indebted to Jens Nielsen, head of the Radium Center, Professor of Radiotherapy, University of Copenhagen, for his ever enthusiastic cooperation.

From the beginning it was planned to select the cases for parasternal dissection according to the clinical criteria of Haagensen and Stout, but a few cases that were inoperable according to these criteria were treated by operation when the patients insisted upon this treatment. These cases will be found in Stage D.

Material

Our material of cases of primary mammary carcinoma is divided in Series I: 59 cases of radical mastectomy including parasternal dissection, and Series II: 417 cases of radical mastectomy including parasternal and supraclavicular dissection.

Series I. Fifty-nine patients from 1950 to 1952 were operated upon by the following technique: Ordinary mastectomy with axillary dissection was followed by dissection of the internal mammary nodes through the intercostal spaces, in most cases without cutting the costal cartilages.

The mean duration of the operation was 66 minutes. Forty-one of the patients in Series I (69%) received prophylactic postoperative irradiation.

Series II. Four hundred and seventeen * patients with primary mammary carcinoma who were operated upon from 1951 to 1956. In this series the operation consisted of radical mastectomy including parasternal and supraclavicular dissection.

The supraclavicular dissection was performed by the technic described by Andreassen and Dahl-Iversen, in 1949.

The skin incision for the mastectomy was done elliptically, depending upon the configuration of the breast and the site of the primary tumor, with an extension upward that should not go lateral to the coracoid process to ensure normal function of the arm later on, and with an extension downward. The lateral skin flap was dissected to the latissmus muscle, then the medial flap was dissected to the middle of the sternum. The breast was then removed

* Our 1963 report of 5 year results in the first Cooperative International Study of the Treatment of Early Mammary Carcinoma included only 366 cases.

TABLE 12. *Radical Mastectomy with Parasternal and Supraclavicular Dissection for Mammary Carcinoma*
(Dahl-Iversen and Tobiassen)

5- and 10-Year Crude Survival Rates

Columbia Clinical Classification	No. of Patients	5-Year Survival		10-Year Survival	
		No.	%	No.	%
	Series I—59 cases—1950–1952				
A	40	22	55	17	43
B	8	4	50	4	50
C	6	4	66	4	66
D	5	0	0	0	0
Total	59				
	Series II—417 cases—1951–1956				
A	312	243	78	185	59
B	67	31	46	14	21
C	28	12	43	8	29
D	10	3	30	1	10
Total	417				

together with pectoralis major except for the clavicular part, and with the pectoralis minor and the axillary contents. The dissection of the axilla was started just below the clavicle where the axillary vein disappears, and was carried laterally. The long thoracic nerve was left in the cavity.

The parasternal dissection was done by cutting the costal cartilages with an ordinary scalpel, approximately 1.0 cm. from the edge of the sternum. The costal cartilages were then lifted by a strip of gauze so that the whole parasternal area, directly on the pleura, could be inspected. In the beginning only the fatty tissue and nodes were removed. Later on the following technic was used: a double ligature was made on the internal mammary vessels just below the first costal cartilage, and then the vessels were removed together with nodes and fatty tissue. By this procedure bleeding from the smaller arterial branches was avoided. The cartilages were sewn together with catgut sutures, and then the mastectomy wound was closed with silk sutures.

Drainage was always used in the axilla. Primary closure without grafts was always performed because of the cutting of the cartilages. This gave in many cases quite some tension on the suture line. In most cases the second, third and fourth costal cartilages were cut. In some cases it was impossible to cut them because of calcification. Then the nodes were removed through the interspaces.

The mean duration of the operation was 107 minutes. Twenty-two patients in Series II (6%) received prophylactic preoperative or postoperative x-ray treatment.

Mortality and Morbidity

The mortality of Series I and II together was approximately 1.0 per cent. In Series I, one patient was lost the thirtieth day after operation because of uremia caused by lung and kidney infarctions.

In Series II, three patients were lost. The first died of embolus in the pulmonary artery 2 days after the operation. The second died the twelfth day because of a perforated diverticulum of colon, with peritonitis. The third died the thirty-ninth day in her home because of embolus in the pulmonary artery. All these four pa-

TABLE 13. *Radical Mastectomy with Parasternal and Supraclavicular Dissection for Mammary Carcinoma*

Columbia Clinical Classification	All Cases with Node Metastases			All Cases with Internal Mammary Metastases			Internal Mammary Metastases Only		
		Survived			Survived			Survived	
	No.	5 Years	10 Years	No.	5 Years	10 Years	No.	5 Years	10 Years
Series I, 59 Cases, 1950–1952									
A	17	6	4	9	4	2	4	0	0
B	7	3	3	1	0	0	0	0	0
C	4	2	2	3	1	1	0	0	0
D	5	0	0	2	0	0	0	0	0
Total	33	11	9	15	5	3	4	0	0
Survival rates		33%	27%		33%	20%		0%	0%
Series II, 417 Cases, 1951–1956:									
A	93	65	39	39	26	13	12	8	4
B	52	24	10	21	8	1	2	1	0
C	14	3	1	5	1	1	0	0	0
D	8	3	1	5	1	0	0	0	0
Total	167	95	51		36	15	14	9	4
Survival rates		57%	31%		51%	21%		64%	28%

tients were between 63 and 65 years of age.

In Series I the parasternal dissection was complicated in five instances with pleural perforation.

In Series II the pleura was perforated in 22 instances. No special treatment was given. In one patient the opening in the pleura was so great that it was treated with suction drainage.

Two patients leaving the hospital without signs of pleural complications were later successfully treated in other hospitals for empyema.

Four patients developed abscess in the parasternal region. Two of these had necrosis of the cartilage of one or two ribs. After resection of the necrotic cartilages the wounds healed.

Results

In Table 12 the survival rates have been calculated for the Stages A to D in our two series of cases.

The operation in Series II was more extensive. The mean operation time was 107 minutes in comparison to 66 minutes in Series I. The 5-year survival rates are at the same time better in Series II than in Series I, even though 69 per cent received postoperative x-ray treatment in Series I, and only 6.0 per cent in Series II had preoperative or postoperative x-ray treatment.

The incidence of microscopically verified axillary as well as internal mammary metastases, and the survival rates of the patients who had such metastases is shown in Table 13. It is interesting that internal mammary metastases not accompanied by axillary metastases were found only in clinical Stages A and B.

The prognostic importance of internal mammary invasion would appear to be of the same order as the importance of metastases to other regional nodes.